



## 1ST YEAR BASIC TRAINING IN CYBER SECURITY



# INTRODUCTION TO OPERATING SYSTEMS 1 (SYST1)

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# Basic Training in Cyber Security (1BT)

## Formation de Base en Cyber-Sécurité (1FB)



## CHAPTER

# 3

## UNIX/LINUX SESSIONS

SYST1'2024/2025

## UNIX/LINUX SESSIONS ( 5 % )



### **COURSE CONTENT**

#### **CHAPTER 3**

- ☐ Introduction
- ☐ Logging in and Logging out of a session
- ☐ Creating user account
- ☐ Closing a session
- ☐ Creating / Changing a password
- ☐ Becoming root (superuser)
- ☐ Shutdown from the command line
- ☐ Advanced Commands

### □ System/Session Connection

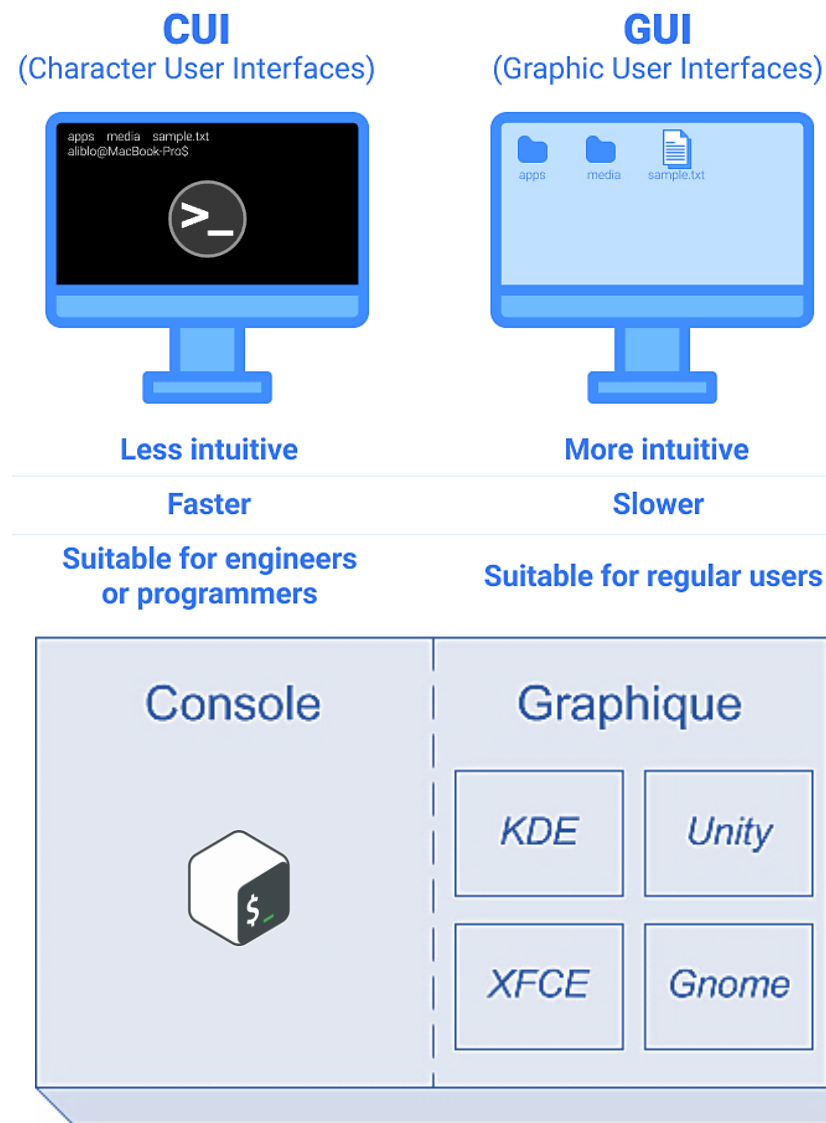
- You have to log in to be able to work on **Linux**
- There are **two connection modes** :
  - ✓ Connection in **text-based** or **console mode** (**terminal**): execution only of commands without graphical mode.

**CLI** (Command-Line Interface)

*Has the advantage of keeping the commands history.*

- ✓ Connection in **graphical mode** (**X-Window**): use of the mouse, graphical windows, launch applications...

**GUI** (Graphical-User Interface)



### ❑ System/Session Connection

#### Common point :

A session starts with user identification and then authentication:

- ↳ Entering the username at the **login** prompt.
- ↳ Enter the password at the **password** prompt.

#### Switching between modes :

On Linux, it is possible to switch between graphics mode and console mode and reverse mode using a combination of keys(**Ctrl + Alt + F1 .... F7**)



## ❑ Logging In and Logging Out of a Session

Logging into a **Linux account** involves two steps :

1. Entering your **user name**, and
2. Entering your **password**.

Type the **user name** for your user account. Consider the following example, the user enters the **os1user** and is then prompted to enter the password:

```
turtle login: os1user  
password:
```

↪ ***When user type in password, it does not appear on the screen.***

This is to protect password from being seen by others. If user enters either the username or the password incorrectly, the system will respond with the error message —Login incorrect!! and will ask for username again, starting the login process over. User can then reenter username and password.



### ❑ Logging In and Logging Out of a Session

Once **username** and **password** entered correctly, user is logged into the system. User's command line prompt is displayed, waiting for user to enter a command.

The command line prompt is a dollar sign (\$) not a number sign (#).

The \$ is the prompt for **regular users**, and the # is the prompt for the **root user**.

The prompt is preceded by the hostname and the current user directory bounded by a set of brackets.

```
[turtle/home/aditi]$
```

To end the session **logout** or **exit** commands are used. This return to the login prompt and Linux waits for another user to log in.

```
[turtle/home/aditi]$ logout
```

or by pressing **Ctrl -D**.



## ❑ Creating user account

When you installed Linux, you created a **superuser (root user)** account. The shell loads automatically when you log in to your account. Superuser account should be used only for system administration and configuration job. To executing commands and applications and exploring Linux operating system you need to create a login for a user account. To create a login for new user “**adduser**” and “**passwd**” commands are used. Following are some steps to create a new user account.

- ❖ **Select a username.** Each user on the system needs a unique login name to access the system and his user account. Usernames should be no more than eight characters. For the new user account the user name we have selected is “Aditi”.
- ❖ **Choose a password.** A good password should be a combination of uppercase letters, lowercase letters and numbers. A password should be at least eight characters.
- ❖ **Login as superuser.** At the login prompt, type root’ and press Enter. You are then prompted for password. Type the password and press Enter. The shell prompt for superuser account look like follows:

```
[root@localhost/root] #
```





## ❑ Creating user account

- ❖ **Create the user account.** At the shell prompt type “**adduser** aditi” and press Enter. Your display should look like as follows:

```
[root@localhost /root]# adduser aditi  
[root@localhost /root]#
```

- ❖ **Assign the password to the account.** Type “**passwd** aditi” and press Enter. You will see the following:

```
[root@localhost /root]# passwd aditi
```

- ❖ **Changing password** for user aditi

New password: Type the password and press Enter. If the system uses shadow passwords, the password does not appear on the screen. Verify the password by entering it second time and press Enter.

Retype new password: Passwd: all authentication tokens updated successfully.

```
[root@localhost/root]#
```



## ❑ Creating user account

- ❖ Press **Alt+F2** to display a new terminal window and login prompt is displayed as follows:

```
Linux Mandrake release 7.1b (hydrogen)
Kernel 2.2.15.0.25mdk on an 1586/tty2
```

### Localhost login:

Here **tty2** is the virtual terminal that you are currently using. If you need to return to the superuser account, press **Alt+F1**.

- ❖ **Log in to your user account.** At the login prompt, type the username and press Enter. Your shell prompt will be displayed as follows:

```
[aditi@localhost /aditi]$
```



## ❑ A Session / User Account

**Log in a Session → Have a user account.**

**A user account:**

- An **identifier** (**Login**) associated with a **UID**.
  - A **confidential password**.
  - A **group**.
  - A **home directory** to store your files.
  - A **shell**.
- ↳ The information is stored in a system file (**/etc/passwd**).
- ↳ The password is **encrypted**.
- ↳ The administrator can change but not find a forgotten password.



### ❑ A Session / User Account

- **To log-in a Session** under Linux system ➔ **Have a user account.**
  - ✓ An account name (Login)
  - ✓ A password
- It is the **system administrator (root)** who created your accounts;
- After creating an account; the **Linux system** has assigned to the user :
  - a **UID**: User ID,
  - a **GID**: Group ID,
  - a **Connection directory** : part of the disk where the user works.
  - a **Shell**



### ❑ Logging a session

Text-based connection (**CLI : Command Line Interface**):

If the **login** / **password** are valid then:

**user@machine:~#**

**user@machine:~\$**

```
Ubuntu 18.04 ubuntu tty1
ubuntu login: Ubuntu
Password:
Welcome to Ubuntu 18.04 (GNU/Linux 4.15.0-23-generic)

 * Documentation:  https://help.ubuntu.com/

278 packages can be updated.
71 updates are security updates.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

ubuntu@ubuntu:~$
```

### ❑ Closing a session

Consists of **logging out** of the session;

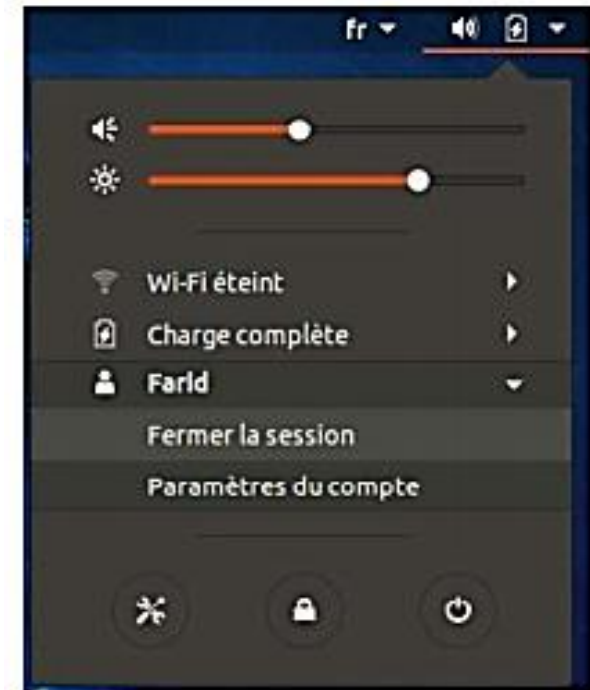
Quit all applications;

Disconnection at each end of use of the system (security reasons and freeing up the workstation).

Consists of **logging out** from the **GUI menu**.

To **log out** from the **console**.

- ➞ **Ctrl + F1, F2 or F7** key combination.
- ➞ Use the **exit** command.
- ➞ Use the **logout** command.



## ❑ Creating / Changing a password

Connection in **graphical mode** :

Select the **user account** you want to log in with.

Enter the **password**.



## ❑ Creating / Changing a password

The choice of password is very important for **data protection**.

### **A good/strong password :**

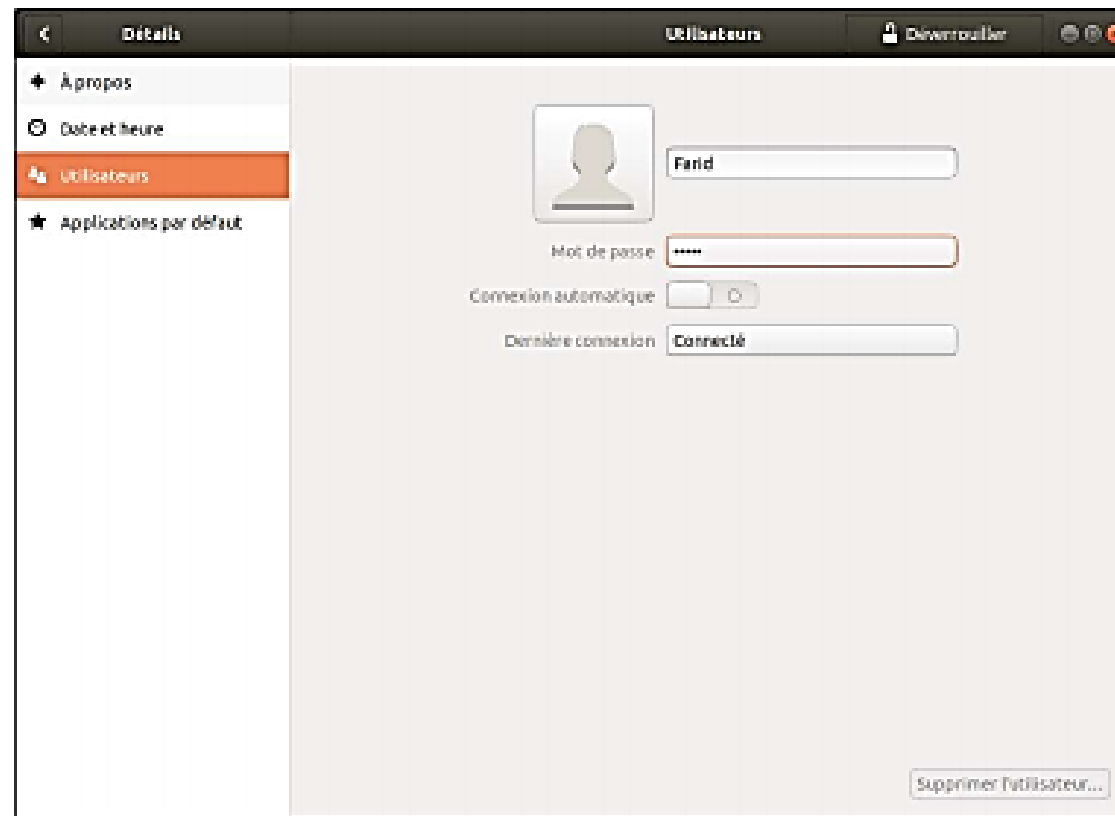
- ✓ Hard to guess;
- ✓ At least 8 characters;
- ✓ Possess uppercase letters, lowercase letters, numbers and special characters (punctuation, special symbols);
- ✓ Not contain any data relating to your identity (date of birth, first name, etc.);
- ✓ Not belong to a dictionary;
- ✓ Do not contain repetitions of characters;
- ✓ Easy to remember;
- ✓ A password for each account;
- ✓ Change your password regularly, or at least whenever you suspect it.





## ❑ Creating / Changing a password

Change your password using the **GUI**



### ❑ Creating / Changing a password

Change the password with the **passwd** command.

**Syntax:** **passwd** [**identifiant**]

No username: each has its own password.

Only the **root** can change the passwords of other users.

```
~$ passwd farid  
Changement du mot de passe pour farid.  
Mot de passe UNIX (actuel) :
```

### ❑ Becoming root (superuser)

When you want to do anything that requires a **high privilege level** (for example, administering your system), you have to become **root**. Normally, you log in as a regular user with your everyday username. When you need the privileges of the superuser, though, use the following command to become root: **su -**

That's **su** followed by a space and the **minus sign** (or **hyphen**). The shell then prompts you for the **root password**. Type the **password** and press **Enter**.

After you're done with whatever you want to do as **root** (*and you have the privilege to do anything as root*), type **exit** to return to your normal username.

Instead of becoming **root** by using the **su -** command, you can also type **sudo** followed by the command that you want to **run as root**. In **Ubuntu**, you must use the **sudo** command because you do not get to set up a **root** user when you install **Ubuntu**. If you are listed as an authorized user in the **/etc/sudoers file**, **sudo** executes the command as if you were logged in as **root**.

Type **man sudoers** to read more about the **/etc/sudoers file**.



### ❑ Shutdown from the command line

User can **shutdown** the system in either of **two ways** :

- First log in to an account and then enter the **halt** command. This command will log out and shutdown the system.

```
$ halt
```

- User can also use the **shutdown** command with the **-h option** to shut down the system or with the **-r option**, to **shutdown** the system and then reboots.
- To shutdown the system immediately, **+0** or **now** options are used.

```
# shutdown -h now
```



## ❖ COMMANDS

### ❑ Basic Commands

Control System	
<i>poweroff</i>	Shuts down the system
<u>reboot</u>	Restarts the system
<u>shutdown</u>	Shuts down or reboot the system
User Management	
<u>useradd</u>	Create a new user account
<u>userdel</u>	Delete a user account
<u>passwd</u>	Change a user's password
<u>groupadd</u>	Add a new group to the system
<u>groupdel</u>	Delete an existing group from the
<u>id</u>	Display the user and group IDs associated with the current user
<u>su</u>	Switch to another user account



## ❑ Advanced Commands

**User Management**

last	Displays the list of previously logged in users
------	---

<u>adduser</u>	Creates a new user on the system
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<u>usermod</u>	Modifies attributes of an existing user
----------------	---

deluser	Deletes an existing user from the system
---------	--

delgroup	Deletes an existing group from the system
----------	---

<u>groups</u>	Prints group membership of a user
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...



### ❑ Summary ...

- ➡ Logging in a session requires a **user account** and **password**.
- ➡ Two types of working sessions: **console (CLI)** and **graphical (GUI)**.
- ➡ The process of accessing a computer system "**logging on**" involves presenting a **username** and **password**, or other forms of identification, to prove one's authorization to gain access.
- ➡ **Password selection** is very important for data protection.
- ➡ Disconnection (**logging out**) at each end of use of the system.

...



**THANK YOU for your attention!**



**Questions ?**



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